RailBoss® Railroad Track Scale

Calibration Guide

This guide is intended for use by operators of the *RailBoss Calibrator*, a specially designed tool to calibrate the RailBoss Railroad Track Scale. For installation and configuration information, refer to the following documents:

- RailBoss Installation Manual, PN 119903
- RailBoss Operation Guide, PN 119890
- RailBoss CIM Installation Manual, PN 181705
- RailBoss CIM Operation Manual, PN 181706

⚠️ **CAUTION** *Take all necessary safety precautions when installing the scale carriage including wearing safety shoes, protective eye wear and using the proper tools.*

Do not place hands, feet or any body part between the RailBoss Calibrator and the RailBoss rail or any possible pinching locations.

Using the RailBoss Calibrator

1. Ensure track grips are arranged as shown in Figure 1 prior to placing the *RailBoss Calibrator* on the track.

Use handles to place calibrator on rail.

Loosen knobs on both track grips

Raise track grip
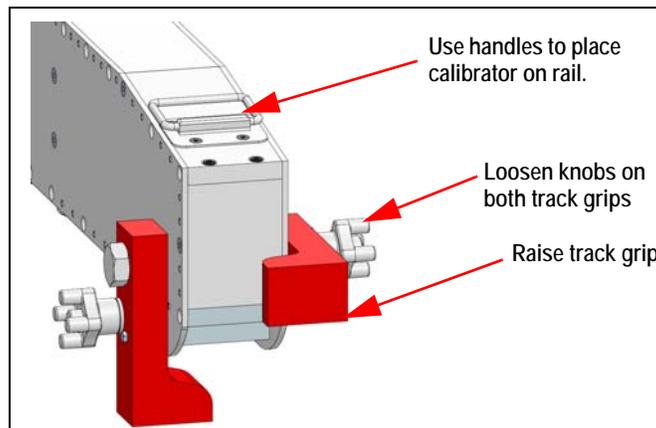
Figure 1. RailBoss Calibrator Track Grips

2. Place the RailBoss Calibrator on the RailBoss rail, centering the calibrator load cell over the center of the yellow reflective strip.

IMPORTANT *This ensures a correct reading from the rail.*

Center Calibrator over yellow strip

Lower and secure track grips
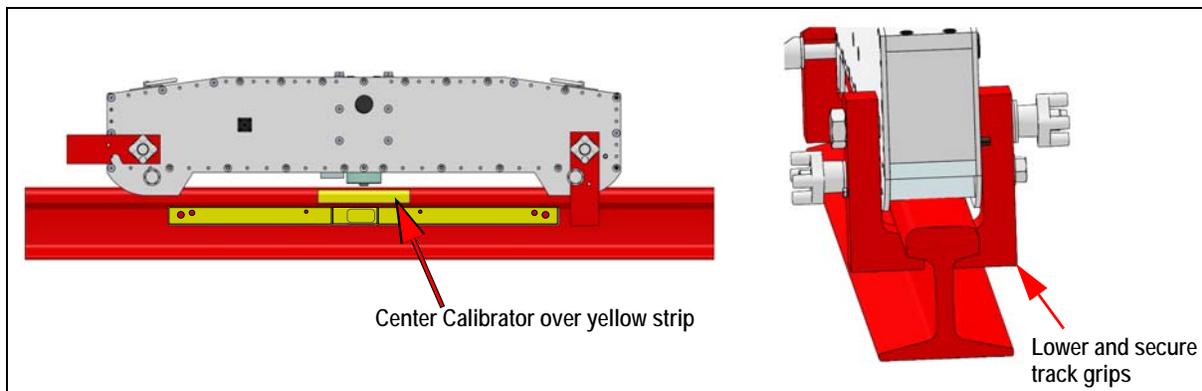
Figure 2. RailBoss Calibrator on RailBoss Scale

3. Lower and secure the track grips.

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4. Attach the indicator and hydraulic pump once the calibrator is securely fitted over the RailBoss live rail.
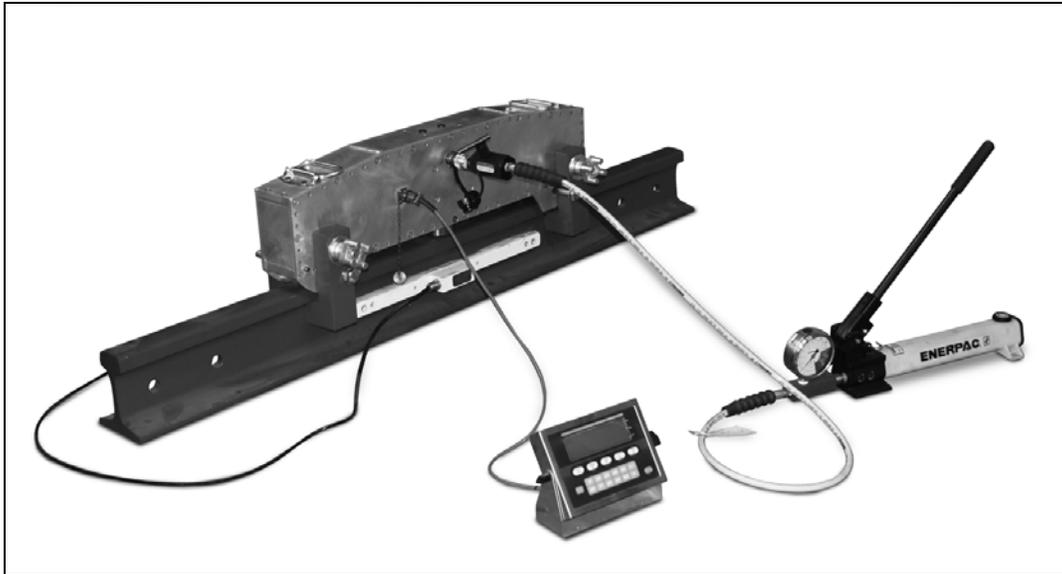
Figure 3. Indicator and Hydraulic Pump Attached to RailBoss Calibrator

5. Ensure the t-valve on the RailBoss Calibrator is open (right hand graphic) and then turn the release valve located on the side of the pump, clockwise (left hand graphic) to close the valve and engage the pump.
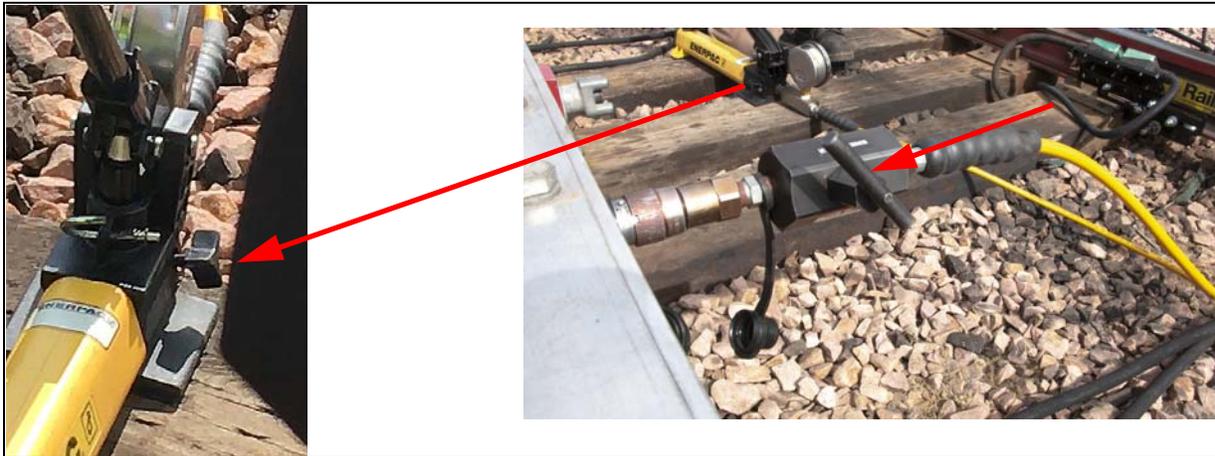
Figure 4. Relief Valve Locations on the Hydraulic Pump and Calibrator

6. Pump until the weight reaches 30,000 lb. Turn the release valve on the pump (left hand graphic in Figure 4) counterclockwise to open the valve to release pressure until the weight returns to zero.

7. Repeat Steps 5 and 6, ten more times before attempting to calibrate.

> **Note** *Hydraulic cylinders tend to bleed down at a slow rate.*

8. Calibrate the indicator to match the scale's 30,000 lb load. If weight is not stable, repeat Steps 4 through 6.

9. Repeat this procedure for each *RailBoss* rail.

10. Disconnect the hydraulic pump and indicator from the calibrator once calibration is complete on all RailBoss rails.

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Trimming the Junction Box

Trimming is a process of equalizing the output from multiple individual load cells. If needed, load cell output can be individually trimmed with potentiometers. Whenever a substantial amount of trim (more than 5% of normal output), seems necessary to equalize output, check for other possible problems. The best trim is always the least amount of trim. Proceed with trimming only when all errors have been corrected except cell mismatch and cable extension or reductions.
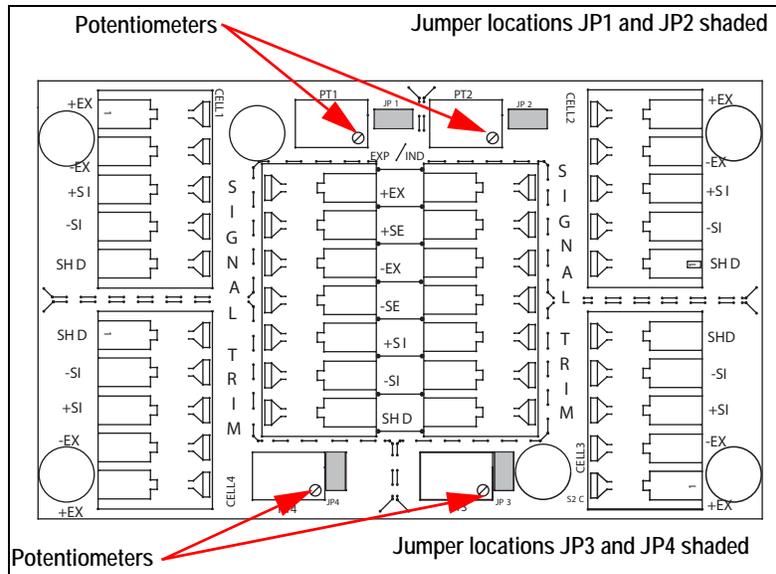
Figure 5. Signal Trim Main Board

Use the following steps to properly trim the JB4SP junction box.

1. Make sure jumpers are in place to enable trimming of the cells corresponding to each load cell. See Figure 5.
2. Turn all potentiometers fully clockwise to give maximum signal output from each cell.
3. Zero the indicator and place the RailBoss Calibrator over each load cell in turn. The recommended test weight amount is 30,000 lb.
4. Record the value displayed on the indicator after the calibrator is placed on each load cell. Allow the scale to return to zero each time to check for friction or other mechanical problems. Select the load cell which has the lowest value as the reference point. This load cell will not be trimmed.
5. Replace the same test load over each load cell in turn. Using the corresponding potentiometer, trim each cell down to equal the reference load cell. Check all load cells again for repeatability and repeat Steps 3 and 4 if needed.
6. Pull excess cable out of the enclosure and tighten the cord grip assemblies. To be watertight, each cord grip must be tightened until the rubber sleeve begins to protrude from the hub.
7. Unused hubs must be properly plugged to prevent moisture entry. See the Rice Lake Electronic Replacement Parts Catalog to order extra hole plugs.
8. Remove the desiccant bag from the plastic bag and insert the desiccant bag into the junction box before closing. Inspect the desiccant bag during normal service and change as needed.
9. Replace the cover and torque the cover screws to 15 in-lb in an alternating pattern to be certain the gasket is compressed equally in all locations.

Calibrating the 920i

The *920i* can be calibrated using the front panel, serial commands, or *iRev*. Each method consists of:

- Zero calibration
- Entering the test weight value
- Span calibration
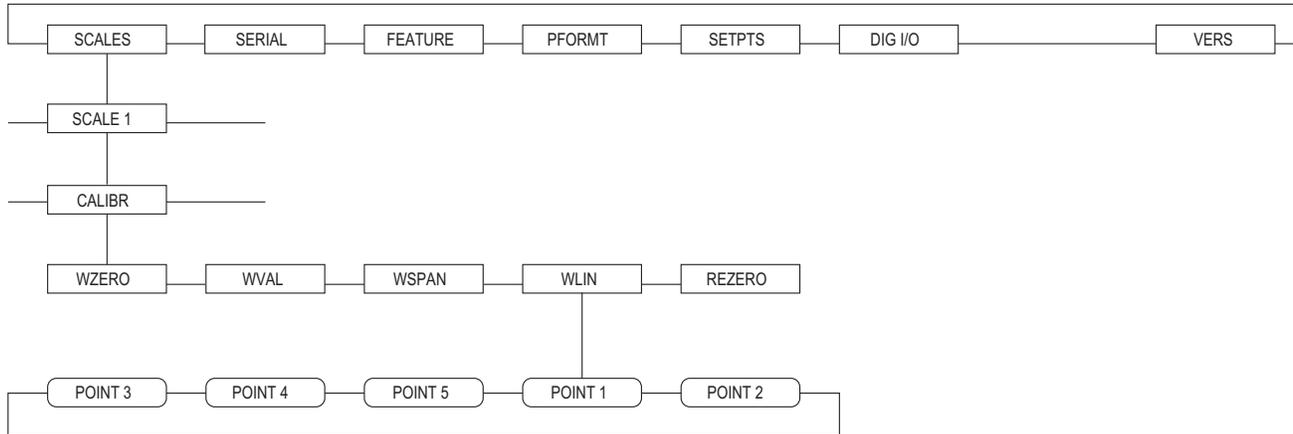
Figure 6. Calibration (CALIBR) Menu

Front Panel Calibration

The CALIBR menu (under the SCALES menu) is used to calibrate the *920i*. The zero, span, and linear calibration point displays provide a set of softkeys used specifically for calibration procedures:

+/– Toggles to allow entry of negative or positive values

Last Zero Recalls the last established zero value to allow calibration without removing tests weights or product from scale

Calibrate Performs calibration for the selected point

Temp Zero Temporarily zeros the displayed weight of a non-empty scale. After span calibration, the difference between the temp zero and the previously calibrated zero value is used as an offset.

Millivolts (or **Counts**) Toggles between display of captured A/D counts and captured millivolts values; allows entry of calibration values in mV or counts.
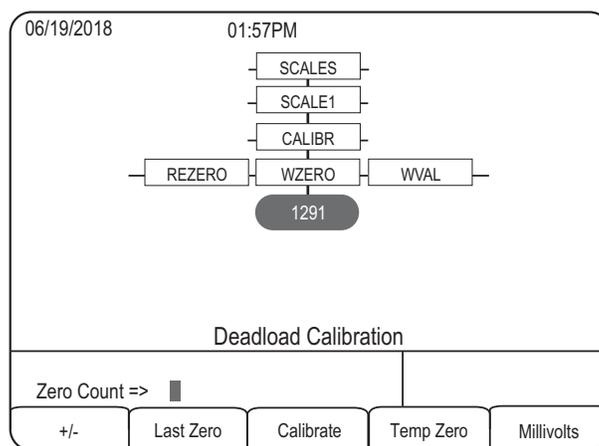
Figure 7. WZERO Calibration Display

To calibrate the indicator using the front panel, do the following:

1. Ensure the junction box trimming procedure has been successfully completed.

2. Place the indicator in setup mode by removing the large fillister-head screw from the enclosure and inserting a non-conductive tool into the access hole and press the setup button. The indicator display changes to show scale configuration menus.

3. With the *SCALES* menu highlighted, press ▼, then select Scale 1.

4. Press ▼ again (*GRADS* parameter highlighted), then press ◀ to highlight the *CALIBR* submenu (Figure 6).

5. Press ▼ to go to zero calibration (*WZERO*). See Figure 7.

6. Ensure scale reading is at zero, then press ▼ to show the current WZERO value.

7. Press the **Calibrate** softkey to calibrate zero. When complete, the new A/D count for the zero calibration is displayed.

8. Press (enter) to save the zero calibration value and go to the next prompt (*WVAL*).

9. With *WVAL* highlighted, press ▼ to show the stored calibration weight value.

10. Use the numeric keypad to enter the actual value of the RailBoss Calibrator load to be used (30,000 lb is recommended).

11. Press (enter) to save the value and go to the next prompt, span calibration (*WSPAN*).

12. Use the RailBoss Calibrator to place a 30,000 lb load on the scale. Press ▼ again to show the current *WSPAN* value.

13. Press the **Calibrate** softkey to calibrate span. When complete, the new A/D count for the span calibration is displayed.

14. Press (enter) to save the span calibration value and go to the next prompt (*WLIN*).

15. When complete, press the **Save and Exit** softkey to exit setup mode.

iRev Calibration

The *iRev* Calibration Wizard provides step-by-step scale calibration. With the *920i* connected to a PC, select the Calibration Wizard from the Tools menu on the *iRev* Scales display, then follow the steps listed below to calibrate the scale.

1. Select Standard Calibration (Figure 8). Press the **Next** button to continue.
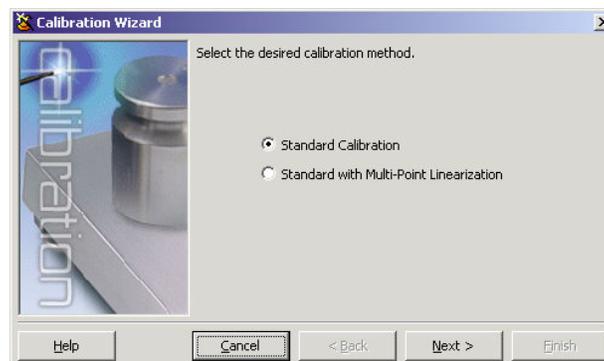
Figure 8. iRev Calibration Wizard

2. Select the scale to calibrate (Scale #1).

Figure 9. iRev Scale Selection Display

3. Enter the RailBoss Calibrator load value used to calibrate the scale (30,000 lb). Checkmark the box if chains or hooks are used during the calibration process.
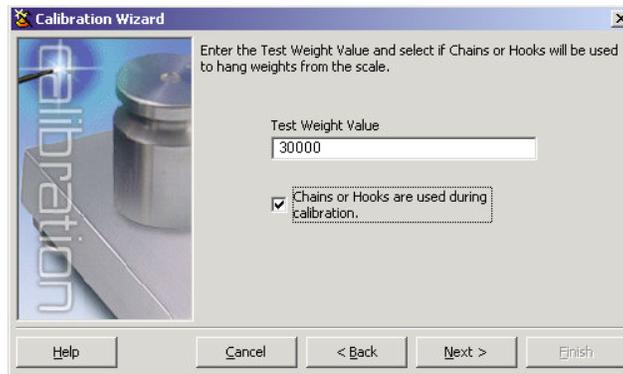
Figure 10. iRev Test Weight Value Display

4. Ensure the scale load is at zero. Press the *Calibrate Zero* button to perform the zero calibration. A message appears when the process is complete.

Figure 11. iRev Zero Calibration Display

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5. Using the RailBoss Calibrator, apply the 30,000 lb load to the scale. Press the *Calibrate Span* button to perform the span calibration. A message displays when the process is complete.

Figure 12. iRev Span Calibration Display

6. Review the new calibration values then press **Finish** to close the Calibration Wizard. To restore the current calibration values, press **Cancel**.

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